

ON DIGITAL RUPIAH AND ISLAMIC ECONOMY: A COMPARATIVE ANALYSIS AND ETHICS

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Abstract: *This study aims to explore the meaning of and to conduct an ethical assessment towards Digital Rupiah to Islamic economy by exploring the thoughts of Baqir Sadr and Henry Sidgwick. This research is about an ethics of Digital Rupiah, and it would like to investigate two problems. First, do these retail and wholesale versions of Central Bank Digital Currency (CBDC) or the so called Digital Rupiah cause any harm to some principles in Islamic economy especially the one in Sadr's thought? Second, is utilitarianism, in the sense of Henry Sidgwick's thought in ethics, of any help to justify the development and innovation concerning Digital Rupiah in Islamic economy and Islamic economics? This method of this research is a comparative analysis for which case seeking similarities and differences among some CBDC. The result is any potential harm of Digital Rupiah to Islamic economy by which case it relies on the way we understand interest, usury and underlying assets. Sidgwick's account of rational benevolence and universal happiness could be a good framework for justifying Digital Rupiah in Islamic economy*

Keywords: *Digital Rupiah, Islamic economy, Ethics*

Abstrak: Penelitian bertujuan untuk mengeksplorasi makna dan penilaian etika terhadap Rupiah Digital terhadap Ekonomi Islam dengan mengeksplorasi pemikiran Baqir Sadr dan Henry Sidgwick. Penelitian ini adalah tentang etika Rupiah Digital, dan ingin menyelidiki dua masalah. Pertama, apakah Central Bank Digital Currency (CBDC) atau Rupiah Digital versi ritel dan grosir ini membahayakan prinsip-prinsip ekonomi Islam, khususnya prinsip-prinsip yang ada dalam pemikiran Sadr? Kedua, apakah utilitarianisme, dalam arti pemikiran Henry Sidgwick dalam bidang etika, dapat membantu menjustifikasi pengembangan dan inovasi terkait Rupiah Digital dalam ekonomi Islam dan ekonomi Islam? Metode penelitian ini adalah analisis komparatif yang mencari persamaan dan perbedaan di antara beberapa CBDC. Hasilnya adalah potensi bahaya Rupiah Digital terhadap ekonomi Islam, yang dalam hal ini bergantung pada cara kita memahami bunga, riba, dan aset dasar. Penjelasan Sidgwick mengenai kebijakan rasional dan kebahagiaan universal dapat menjadi kerangka kerja yang baik untuk menjustifikasi Rupiah Digital dalam ekonomi Islam.

Kata Kunci: Digital Rupiah, Islamic economy, Ethics.

INTRODUCTION

Bank Indonesia (BI) would release both types of wholesale and retail CBDC (Central Bank Digital Currency), and BI has been disseminating the white paper entitled *Project Garuda: Navigating the Architecture of Digital Rupiah* since 30 November 2022. There are indeed three main principles for issuing the Digital Rupiah viz., no harm principle, the co-existence principle and more efficient and innovative principle (Bank Indonesia, 2022, p. 3). Therefore, there is a lacuna between the way MAS and BI do consider the retail CBDC as to whether or not it is a harm to each currency in Singapore and Indonesia.

Perhaps, the increasing value of Indonesian digital economy encourages the BI to take both types of CBDC whose details are following: “The value of electronic money transactions in March 2023 grew 11.39% (yoY) to reach Rp34.1 trillion. The value of digital banking transactions grew 9.88% (yoY) to reach Rp4,944.1 trillion and the value of transactions using ATM cards, debit cards and credit cards increased 0.45% (yoY) to reach Rp707.1 trillion. Moving forward, Bank Indonesia expects digital economic and financial transactions to continue growing as public activity increases combined with the expansion and optimisation[*sic!*] of the user ecosystem” (Bank Indonesia, 2023a, p. 4).”

Suppose that there have been approximately 8,293.6 trillion rupiah circulating in Indonesia as per March 2023 (Bank Indonesia, 2023b). It means that more than half of the value of such

circulations did happen through digital banking during the first quarter of 2023. If we agree with a saying that “economics is too important to be left to economists,” then Muslims should not let Islamic economics (the study) and Islamic economy (a set of commercial activities being in compliance to the Islamic jurisprudence) to be left to economists and Islamic jurists (*fuqaha*). Indeed, Islamic philosophers, ethicists, anthropologists, sociologists, *mutakallimun* (Islamic theologians), and other Islamic scholars should meddle with the development and innovation of Islamic economy in the digital era.

To set a common ground to all of those scholars, it is indispensable to investigate these following questions: 1) Do these retail and wholesale versions of Central Bank Digital Currency (CBDC) or the so called Digital Rupiah (in Indonesian context) cause any harm to some principles in Islamic economy especially the one in Sadr’s thought? 2) Is utilitarianism, in the sense of Henry Sidgwick’s thought in ethics, of any help to justify the development and innovation concerning Digital Rupiah in Islamic economy and Islamic economics?” Unlike most articles in monetary economics and finance, I will address those questions through an extensive literature review in the next section.

LITERATURE REVIEW

Ayatollah Baqir Sadr might be the one and only contemporary *fuqaha* or Muslim jurist who paid serious attention to the discourse of Islamic economy. He wrote two volumes of *Iqtisādunā* each of which

has two parts; for arguing in favor of Islamic economy and against its capitalist and socialist counterparts. According to Furqani, “It suffices to say that beside al-Sadr’s work, so far there is no such comprehensive work on comparative economic system in Islamic perspective” (Furqani, 2019, p. 63). Interestingly, Furqani interprets that Baqir Sadr did not consider the nature of Islamic economics as an ‘ilm (science) that applies rational methods and not being practical; but merely a *madhhab* (school of thought, doctrine, system) that strives to change realities to be in line with some irrefutable principles (Furqani, 2019, p. 64). Having said that, Furqani admits that “he never denied the possibility of Islamic economics to be a science when those doctrines are clear” (Furqani, 2019, p. 66).

In the *Iqtisādunā* volume 2 part 1; Baqir Sadr draws a line between the science of economics and the economic doctrine in this following way: “The economic doctrine is an expression of the way which the society prefers to follow in its economic life and in the solution of its practical problems; and the science of economics, is the science which gives the explanation of the economic life, its economic events and its economic phenomena and the linking of those events and phenomena with the general causes and factors which rule therein...the Islamic economic[*sic!*] is a doctrine and not a science, for it is the way which Islam prefers to follow in the pursuit of its economic life, and not an interpretation with which Islam expounds the events of economic life and the laws which govern them (aş-Sadr, 1982a, p. 6)...Hence the

economic science is a science of the laws of production, and the economic doctrine is the art of the distribution of wealth” (aş-Sadr, 1982a, p. 7).” Therefore, a doctrine should not accordingly be a science or an academic discipline. He furthermore also distinguishes between the economic doctrine and the civil law. On the one hand, Baqir Sadr defines “the civil law is the legislative enactments which regulate the details of pecuniary monetary relations between individuals and their personal and substantive (real aim) rights.” On the other hand, his definition of the economic doctrine is “a collection of the basic theories which treat of the problems of economic life” (aş-Sadr, 1982a, p. 14). In other words, the civil law seems to be a derivative of the economic doctrine because, as a doctrine, the latter could easily influence everyone including lawmakers, and the civil law is way more concrete and details compared to the latter. It is not impossible that the economic doctrine could influence the civil law. Having said that, Baqir Sadr argues “...the economic doctrine (system) of a society cannot be the same as the civil law of that state, for the capitalism qua the economic doctrine (system) of the many states of the world is not the very (system of the) civil law of those states” (aş-Sadr, 1982a, p. 14).

If this is the case, then capitalism qua the economic doctrine of a Muslim country could also function along with the Islamic law. Indeed, researchers of Islamic economy should not offer a set of Islamic ordinances that is merely coherent with the civil law because it would imply ambiguity and confusion (aş-Sadr, 1982a, p. 14). They should also not to do

oversimplification by equalizing between a collection of the laws of Islam such as *muāmalāt* and the property rights; with the economic doctrine or system in Islam (aş-Şadr, 1982a, pp. 14-15). In a nutshell, Baqir Sadr believes that it is (always) false to think about the Islamic economic doctrine as a collection of consensus on civil law concerning dealings; nor as a science of economics (aş-Şadr, 1982a, p. 19).

If this is the case, then the Islamic economics would not thrive as maximum as possible with respect to the development and innovation of Islamic economy. In fact, there is a significant difference of meaning between ‘economics’ and ‘economy’ by which case people sometime confuse the two. While the former refers to an academic discipline, a study or a science on how people organize their money, industry and trade; the latter means the connection between production, supply of money and trade in a region or a specific country. As a consequence, one should have called it ‘Islamic economy’ instead of ‘Islamic economics’ especially when the material object is not an academic discipline. To an extent, such confusion might be due to the word *‘ilmīyyah* in Arabic whose context of meaning is wider in scope compared to the word science in English. In contrast, another type of economics, such as the advanced capitalism, would always be unimpeded to co-opt the idea of; developing innovation on; taking advantage of; and generating profit out of the Islamic economy without embracing Islamic values and doctrines seriously. On this occasion, it is indispensable to distinguish between the

real Islamic economy and the advanced capitalism’s fabrication of ‘Islamic/sharia economy’ by identifying the former’s essential features.

There are three elements of Islamic economy according to Baqir Sadr in his book entitled *Iqtisādunā*. They are: 1) The double ownership principle. 2) The principle of limited economic freedom. 3) The principle of social justice principle (aş-Şadr, 1982b, p. 51). What he means by ‘double ownership’ is neither socialism nor capitalism, but accepting and providing ‘state ownership,’ general (public) ownership and private ownership their own field to function in the Islamic economy. It is therefore incorrect to perceive the Islamic economy as socialist, capitalist nor the blending of the two. Types of ownership, according to Sadr, “only an expression of an original religious planning which is based on certain ideological basis and which lies within a special framework of values and meanings...” (aş-Şadr, 1982b, pp. 52-53).

Moreover, Baqir Sadr claims that “Thus in Islam’s view ownership constitutes a right carrying responsibility and not an absolute authority” (aş-Şadr, 1982b, p. 70). In addition to double ownership, Baqir Sadr also calls it as “multi-form ownership” (aş-Şadr, 1982b, p. 62) by which case it could enrich our understanding towards the first principle. Moreover, the second principle is also neither socialism nor capitalism, and it deals with two further restrictions based upon Islamic spiritual and moral values. These restrictions make the freedom is limited in its sphere. First, the personal restriction which arises from one’s self,

and its strength comes out from the Islamic personality. Second, the objective restriction which reflects an external power which regulates and defines social behaviors (as-Şadr, 1982b, pp. 54-55). The third principle consists of 'general reciprocal responsibility' and 'social balance' (as-Şadr, 1982b, pp. 60-61). These two components would bring forth happiness to the society (as-Şadr, 1982b, p. 62).

Moreover, it is quite surprising that Baqir Sadr draws a line between the Islamic economics and *fiqh al-mu'amalah*. On this occasion, Furqani argues that: "Interestingly, although al-Sadr considers Islamic economics as a doctrine and his approach to some writers is a juristic approach in economics (Wilson, 1998 and Mallat, 1994), he rejects the idea that Islamic economics is *fiqh al-mu'amalah*. Although Islamic economics in his conception is a doctrine upon which laws relating to economics are shaped, it is not equivalent to *fiqh al-mu'amalah* for the latter has different scope and framework of study. Al-Sadr firmly clarifies that *fiqh al-mu'amalah* speaks of a collection of laws of Islam by which it regulates property rights (*huquq al-maliyyah*) and business transaction and rules of dealing (*al-mu'amalah*) such as sale, lease (hire), partnership, adulteration, gambling, deceit and so on. Islamic economics' scope of study is wider than merely on legal basis of economic life as it relates to consumption, production and distribution" (Furqani, 2019, p. 69).

In short, the Islamic economics is not equal to *fiqh al-mu'amalah* because the former has wider scope compared to the

latter. If this is the case, then some critical questions are: 1) could Islamic economics, as a doctrine, inspire and direct the *fiqh al-mu'amalah* to discover some breakthrough in Islamic jurisprudence? 2) to what extent should the Islamic economics comply to the *fiqh al-mu'amalah*? Think about the phenomenon of cryptocurrencies, CBDC and artificial intelligence. Should the profit-taking of these two emerging goods submit to ethics rather than the traditional *fiqh al-mu'amalah*? Or should Islamic jurists or *fuqaha* do more *ijtihad* to establish a modern version of *fiqh al-mu'amalah*? I leave these questions to Islamic economists and *fuqaha*, but I can say that affirmation and negation towards these questions would, to some extent, correspond with the way Islamic jurists conceive *fiqh* in general. The variety of *fiqh al-mu'amalah* in Sunni and Shia should inspire Islamic economists especially in dealing and responding the issue of CBDC, but it is not the case yet. If the contemporary *fiqh al-mu'amalah* and Islamic jurists have no cogent fatwa concerning CBDC yet, then ethicists could enjoy a high threshold of academic freedom to explore and investigate CBDC.

Baqir Sadr moderately acknowledges the role of interest for developing the discovery process of Islamic economic doctrine as following: "Now Islam has prohibited interest in the pecuniary transaction, just as it has prohibited deceit. But the unlawfulness of the interest and the prohibition of lending or borrowing against interest has a share in the process of discovery inasmuch as it is a component part of the superstructure of the theory of the distribution of the

wealth produced and as such reveals the general basic rule for the distribution of wealth in Islam..." (as-Şadr, 1982, pp. 26-27).

The notion of 'a share' or 'the role' does not mean that he allow interest to a certain degree, but it is more to an objective assessment towards the phenomenon of non-Islamic economy, and its potential contribution and influence to the historical development of Islamic economy. Had Baqir Sadr held that interest were tolerable in the Islamic economy, he should have drawn a strict line between interest in general and usury in particular.

Moreover, it is also necessary to pay attention to Henry Sidgwick's thought on currency and ethics. Sidgwick believes that the variety of available financial instruments do not really represent what they are supposed to do. He gives an example on personal checks as following: "It may seem that when cheques on one bank are paid into another, material money must pass between bank and bank. But by the system of the Clearing House the mutual claims of the different banks are set off against each other; so that, even when the balance daily due from each bank to any other was paid in notes, the amount of these required was very small in proportion to the amount of liabilities transferred; and now no notes are commonly needed at all, as such balances are paid by drafts on the Bank of England, where the other banks keep the main part of their reserves" (Sidgwick, 1901, p. 228).

Personal checks might resemble the retail CBDC because both of them are instruments for representing individual

wealth being used in transactions, but this kind of economic representation could be thought-provoking in Sidgwick's thought concerning political economy. Walter Bagehot's book entitled *Lombard Street: A Description of the Money Market* (1873) does influence Sidgwick on this occasion. Sidgwick argues in favor of a view saying that the so called "one-reserve system" is responsible for not producing money in the form of banknotes or coins as a consequence of proceeding loans through the instrument of a personal check (Sidgwick, 1901, p. 228). Thereby, issuing CBDC might mean an innovation to increase the number of legitimate means for commodity exchanges in a country or cross border transactions. According to al-Ghazali, Islamic economy and its economists should embrace money no more than: "an 'intermediary' between assets, and works 'like a mirror,' and only reflects the value of goods...Money should not be created just because its very existence should create a demand for it, but rather it should be used for the procurement of other goods..." (Al-Ghazali in Shirazi, 1988, p. 39).

However, Sidgwick criticizes money as the medium of exchange in which case money does complicating and facilitating the transfer of commodities (Sidgwick, 1901, p. 231). It is 'complicating' because, according to Sidgwick, "Of course, a man ordinarily borrows money in order to buy something else, or to pay for something already bought; but what he actually borrows and is legally bound to repay is the medium of exchange, and it is materially inexact to represent him as borrowing anything else" (Sidgwick, 1901,

p. 231). He rather considers money as the means for wealth-transfer because, as Sidgwick argues that, “there are many transfers of wealth which are not in any sense exchanges, such as payment of fines and damages, distribution of property or income among members of a family” (Sidgwick, 1901, p. 232). Insofar as the retail CBDC would serve these kinds of transactions, it is practically a means for wealth-transfer in the digital age. Having said that, Sidgwick does not buy the idea that legal currency such as a convertible note could render “a sufficiently important distinction” with respect to the demand for converting notes to coins because, as he claims, “the equivalence of such notes to the coin they nominally represent is sustained not by their legal currency (which is of course no protection against depreciation by over-issue), but by the belief that they can be exchanged for coin at will” (Sidgwick, 1901, pp. 234-235). If this is the case, then CBDC should build confidence in order to overcome its fragility. This confidence requires more than simply putting the slogan “In God we trust” into the USD CBDC for example.

According to de Lazari-Radek and Singer, Sidgwick simplifies three methods of ethics as below: “Sidgwick defines a method of ethics as a rational procedure for deciding what we ought to do. He groups these rational procedures into three different types: egoism, intuitionism, and utilitarianism, thus limiting the possible rivals to utilitarianism to two; one of which, egoism, many ethical thinkers find repellent” (de Lazari-Radek & Singer, 2014a, p. x). Each method of ethics has its own axiom. Sidgwick argues that Rational

Benevolence is the axiom for his Utilitarianism; Prudence is the axiom for Rational Egoism; while Justice in the sense of Equity is the axiom for both Intuitionism and Utilitarianism (Sidgwick, 1962, pp. 386-387).

If a central bank argues against CBDC on the ground of avoiding unnecessary risks, then one might claim that the method of ethics of such a central bank is Rational Egoism. Furthermore, while it is relatively easy to recognize egoism, drawing the line between intuitionism and utilitarianism might take a serious effort. According to Sidgwick, intuitionism or common sense approach to ethics “have yet regarded General Happiness as an end” (Sidgwick, 1962, p. 85). This account of General Happiness is indispensable in Sidgwick’s account of utilitarianism because it determines what Universal Good is. The interpretation of ‘Universal Good’ as ‘Universal Happiness,’ according to Sidgwick, determines the success of transition from Intuitionism to Utilitarianism. This transition is inevitable in ethics because, as Sidgwick argues, “Intuitionism tends to pass, when the demand for really self-evident first principles is rigorously pressed” (Sidgwick, 1962, pp. 388-389). In other words, Sidgwick’s Utilitarianism requires axioms (in the sense of self-evident truths) while Intuitionism does not always need it. This idea is similar to demonstration and axioms in the logic of Aristotle or *burhan* and *badihia* in Islamic logic (*mantiq*).

Ethics needs logic (in the sense of a particular way of thinking rather than a universal one) in order to justify an act or a

rule in the situation of a dilemma or a conflict of interest. Digital Rupiah needs justification on the basis of secular approach one of which is Sidgwick's Utilitarianism; and religious approach such as Islamic economy given that most Indonesians are Muslims. On this occasion, Baqir Sadr's thought on Islamic economy and Henry Sidgwick's thought on Utilitarianism; might serve as a good theoretical bridging for CBDC and its relevance to Islamic economy for two reasons. First, both of them believe in the importance of self-evident truths or axioms for economics and ethics. Second, what Sidgwick argues in favor of 'Universal Happiness' is similar to what Baqir Sadr thinks as 'the real general interests of the human society' (as-Sadr, 1982b, pp. 89-90).

Furthermore, Thomas Lembong used to be very optimistic that Indonesia could be the ASEAN's center of digital economy by 2020 (Lembong in Barata, 2019, p. 146). It did not happen nevertheless. Barata indeed makes an interesting claim that "E-commerce provides benefit for the Indonesian society, especially Muslims. Because the platform generally does not use a credit card payment system, the transaction is also expected to be free from usury (riba)[sic!]" (Barata, 2019, p. 154). However, he did not explore further why it is the case. Barata discovered that there was an increment of economic output as much as IDR 5,08 trillion or a growth of 0.048 percent of the national economic growth as a consequence of the IDR 3.90 trillion investment shock in the sub-sector of e-commerce sharia. The household

consumption was also increased as much as IDR 240.40 billion (Barata, 2019, p. 161). Moreover, Grassa et al., revealed an interesting finding concerning 32 Islamic banks in the Gulf Cooperation Council in between 2006-2020. Those Islamic banks are less resilient and profitable in the Covid-19 pandemic compared to their performance during the global financial crisis (Grassa, Sarea, El-Halaby, & Damak, 2022, p. 252). Those Islamic banks should choose digitization and financial technology (fin-tech) because both of them, according to Grassa et al., are the key to manage situations in the pandemic and the global financial crisis. Fintech could assist those Islamic banks to be more competitive by reducing costs, increasing transparency, rising standardization and streamlining processes (Grassa, Sarea, El-Halaby, & Damak, 2022, p. 266).

It is surprising that, according to Rizvi and Ali, the Indonesian shariah compliant equity dealt with a similar volatility faced by its conventional counterparts during the Covid-19 pandemic though the former recovered relatively faster than the latter (Rizvi & Ali, 2022, p. 451). Due to quicker decoupling than their conventional counterparts, both Islamic gold-backed cryptos and the co-movements of Islamic equity market could be a potential diversifying Islamic portfolio for investors and managers (Rizvi & Ali, 2022, p. 444). However, the BI has banned all types of cryptocurrencies since early 2018, and their argument proceeds in this following way: "Ownership of virtual currency is very risky and full of speculation because there is no responsible authority, there is no official

administrator, there is no underlying asset that underlies the virtual currency price and the trading value is very volatile so it is vulnerable to the risk of bubbles and is prone to being used as a means of money laundering and terrorism financing, so that it can affect the stability of the financial system and harm the public. Therefore, Bank Indonesia warns all parties not to sell, buy or trade virtual currency" (Bank Indonesia, 2018).

However, cryptocurrencies has been innovating rapidly so that its underlying assets may involve oil and gold especially to some Islamic cryptocurrencies. The BI admits that the Covid-19 pandemic has pushed the rapid growth of crypto assets, and they foresee the potential to increase efficiency and develop inclusion to the financial system though it is not risk-free (Bank Indonesia, 2023c). With respect to the business model of CBDC, the BI claims that: "Digital Rupiah business model encompasses an end-to-end process of issuing and distributing w-Digital Rupiah and r-Digital Rupiah...Bank Indonesia issues w-Digital Rupiah to wholesalers and non-wholesalers. Only wholesalers have the right to convert their w-Digital Rupiah into r-Digital Rupiah, as well as distributing them to retailers and/or end users. The process ends with the collection of r-Digital Rupiah into w-Digital Rupiah, followed by redemption of the latter" (Bank Indonesia, 2022, p. 25). In other words, the BI takes the courage to release both types of CBDC while, in contrast, other central banks are prone to one-tier CBDC. Therefore, it is indispensable to examine the arguments of other central banks.

The US Federal Reserve (The Fed) makes a broad definition of CBDC as "a digital liability of a central bank that is widely available to the general public. In this respect, it is analogous to a digital form of paper money" (The Federal Reserve, 2022, p. 1). This American central bank would like to release CBDC which has no underlying asset to defense its value (The Federal Reserve, 2022, p. 17). Due to the prohibition of direct accounts for individuals in the Federal Reserve Act (The Federal Reserve, 2022, p. 13), the US central bank will not establish the retail version of CBDC. The Fed acknowledges some risks of CBDC such as decreasing the aggregate amount of deposits in banks as a consequence of "a widely available CBDC" (The Federal Reserve, 2022, p. 17). This notion of 'a widely available CBDC might be a hint to the retail CBDC. The Fed also implies an interest-bearing CBDC for attracting more users to leave behind commercial bank money (The Federal Reserve, 2022, p. 17). They also consider to restrict the possession of CBDC on individual users or to limit its accumulation in a certain period of time (The Federal Reserve, 2022, p. 18). Indeed, The Fed interestingly claims that "For a nation's economy to function effectively, its citizens must have confidence in its money and payment services" (The Federal Reserve, 2022, p. 1).

However, Representative Tom Emmer initiated the CBDC Anti-Surveillance State Act on February 21st, 2023. This bill prohibits The Fed to "offer products or services directly to an individual, maintain an account on behalf

of an individual, or issue a central bank digital currency directly to an individual" (Rep. Emmer, 2023). In other words, the bill prohibits the Fed to provide the CBDC. Moreover, Senator Mike Lee introduced the No Central Bank Digital Currency Act on March 23rd, 2023. This bill forbids the Fed to: "mint or issue a central bank digital currency directly to an individual (including central bank digital currency issued to an individual through a custodial intermediary) or a digital currency intermediary, offer related products or services directly to an individual, or maintain an account on behalf of an individual (including an account in a specially designated account at a digital currency intermediary or supervised commercial bank)" (Sen. Lee, 2023).

In contrast to such refusal against the CBDC, there are some breakthrough from Texas by which case Dorazio et al., proposed a bill whose definition of digital currency is "the digital representation of gold and silver specie and bullion held in the pooled depository account...'Pooled depository account' means the account in the Texas Bullion Depository" (Dorazio, n.d.). It is also interesting to pay attention to the purpose and background of this bill which says "While many Texans choose to purchase gold and silver, there is almost no option for them to use it in everyday life. C.S.H.B. 4903 seeks to make the depository more accessible and usable for Texans by providing for the issuance of gold and silver specie and the establishment of a digital currency based on gold and silver" (Dorazio, n.d., p. 2). Therefore, this bill reflects a sense of

making Texans' investments on gold and silver to be more productive, in addition to reduce the risk of volatility of CBDC.

Florida turned out to be the first state in the US to outlaw CBDC. Governor Ron DeSantis approved the SB 7054 – Central Bank Digital Currency on May 12th, 2023. This law redefines money as: "a medium of exchange that is currently authorized or adopted by a domestic or foreign government. The term includes a monetary unit of account established by an intergovernmental organization or by agreement between two or more countries. The term does not include a central bank digital currency" (The Florida Senate, 2023, p. 2).

In other words, money is no more than a monetary unit and a means for exchange in Florida. In contrast to such definition of money, CBDC according to the SB 7054 is: "a digital currency, a digital medium of exchange, or a digital monetary unit of account issued by the United States Federal Reserve System, a federal agency, a foreign government, a foreign central bank, or a foreign reserve system, that is made directly available to a consumer by such entities. The term includes a digital currency, a digital medium of exchange, or a digital monetary unit of account issued by the United States Federal Reserve System, a federal agency, a foreign government, a foreign central bank, or a foreign reserve system, that is processed or validated directly by such entities" (The Florida Senate, 2023, pp. 1-2).

In other words, Florida needs to redefine its definition of money in such a way to exclude the CBDC. Indeed, their

definition of CBDC addresses the r-CBDC on the first place, and this situation reflects their concern on Floridians' privacy. Governor Ron DeSantis argued that "Biden's Central Bank Digital Currency aims to increase government control over people's finances, and we will not allow it. In Florida, we value personal freedom and won't allow self-interested elites to chip away at our liberty" (NN, 2023). This is a consequence of what The Fed considers as "consumer privacy" in which case: "A general-purpose CBDC would generate data about users' financial transactions in the same ways that commercial bank and nonbank[*sic!*] money generates such data today. In the intermediated CBDC model that the Federal Reserve would consider, intermediaries would address privacy concerns by leveraging existing tools" (The Federal Reserve, 2022, p. 19).

The notion of 'leveraging existing tools' are multi-interpretive and elusive nevertheless. It might mean developing existing tools either to protect consumers' data and information, to conduct surveillance on consumers, or to monetizing such data. Thereby, addressing the issue of privacy is inevitable to all bank centrals around the globe as to whether both types of CBDC or only the retail CBDC that threat individual privacy. To shed some light, I will explain the methodology for this inquiry in the next section.

METHOD

The methodology for this investigation is comparative analysis for a qualitative research in the study of ethics. This comparative analysis is also

compatible with the concern to discuss Digital Rupiah in the perspective of ethics. According to Adiyia and Ashton, similarities and distinctions among cross-border variables are typically the focus of comparative analysis (Adiyia and Ashton in Blair-Walcott, 2023, p. 80). On this occasion, it is indispensable to compare between the recent development of CBDC in Indonesia, Singapore and the US for, according to Pickvance, acquiring deeper comprehension into causal processes (Pickvance in Blair-Walcott, 2023, p. 81), given that CBDC is on-going projects here and there. Blair-Walcott explains that there are four steps for conducting this comparative analysis as following: 1) decide the study's overall objective(s) 2) pick the cases or subjects for comparison. 3) determine the framework for comparison or analysis. 4) choose methods for data gathering and analysis (Blair-Walcott, 2023, pp. 81-82).

With respect to the first step, the general objective of this inquiry is to find out any potential harm of CBDC against some principles in Islamic economy. Given that there was no digital currency during the lifetime of Prophet Muhammad PBUH, it is inevitable for Muslims to investigate and address the gap between Islamic economy and CBDC (or Digital Rupiah in the Indonesian setting). Having said that, this research would also like to explore the potentials of utilitarianism to bridge theoretical and practical gaps between CBDC and Islamic economy.

The unit of analysis of this research is the Indonesian CBDC, namely Digital Rupiah as it is available in the BI's white paper entitled "Project Garuda:

Navigating the Architecture of Digital Rupiah.” In addition to the Indonesian CBDC, it is highly necessary to compare it with the Singaporean CBDC as it is available from within a monograph entitled “A Retail Central Bank Digital Currency: Economic Considerations in the Singapore Context.” The US CBDC will also be a focus of this investigation as it ignites some legal challenges in Florida and Texas. It is not impossible that a similar legal challenge against the Digital Rupiah would arise in Indonesia due to the local autonomy. The main focus for the US CBDC is the Fed’s document entitled “Money and Payments: The U.S. Dollar in the Age of Digital Transformation.” In this document, The Fed argues that “Cryptocurrencies have not been widely adopted as a means of payment in the United States. They remain subject to extreme price volatility...Stablecoins are a more recent incarnation of cryptocurrency that peg their value to one or more assets, such as a sovereign currency or commodity” (The Federal Reserve, 2022, p. 11).

In Indonesia, there is RupiahToken whose value “will always worth 1 Rupiah, like an e-wallet, but stands on the blockchain” (PT Rupiah Token Indonesia, n.d.). PT Rupiah Token Indonesia, a start up company which issues the RupiahToken, argues in their white paper that they have no duty to conduct buyback of RupiahToken, and their product does not represent debenture nor indebtedness of their consumers. Having said that, PT Rupiah Token Indonesia might work hand in hand with third parties to ensure their product has a similar value to the tangible

Rupiah (PT Rupiah Token Indonesia, n.d., p. 4). Although RupiahToken is not the unit of analysis for this research, its innovation is quiet challenging to the Digital Rupiah.

There are two theoretical foundations for this investigation. First, Baqir Sadr’s theory concerning Islamic economy by which case he distinguishes the former and its capitalistic and socialistic counterparts based upon the nature of ownership belong to each economic system. Although he was a Shiite scholar while most Indonesian Muslims are Sunni, Sunni Muslims should not ignore his thoughts especially if they would like to seek some innovation and breakthrough with respect to the development of Islamic economy. Differences on Islamic jurisprudence, I believe, should enrich rather than to impoverish the contemporary Islamic economy. This is a religious approach towards the Digital Rupiah.

Second, Henry Sidgwick’s utilitarianism that is arguably different from egoism and intuitionism (particular common sense). I need this secular approach because Digital Rupiah is not exclusively design only for Indonesian Muslims and Islamic economy but also to non-Muslim Indonesians and the Indonesian economy in general. Given that Sidgwick’s utilitarianism is different from Bentham’s and Mill’s, the former may set a theoretical foundation to bridge the gap between Digital Rupiah and Islamic economy especially to those who are in favor of non-religious mode of thinking.

The process for data collection is not limited only to documents published by the Indonesian, Singaporean and American central banks but also some books, journal articles, media coverage, bills and acts and other potential sources. Indeed, the American CBDC has triggered serious resistance from some states like Florida and Texas so that bills and acts are important for this study. Therefore, it is inevitable to delve into some bills and acts. With respect to the discourse of ethics, I limit my inquiry to Henry Sidgwick's ideas in ethics because he conceives a different character of utilitarianism compared to Bentham and Mill. In general, utilitarianism makes more sense to commercial activities and economy especially when it gives emphasizes on the benefits and cost analysis. Sidgwick's thought, on this occasion, distinguishes utilitarianism from rational egoism and intuitionism (particular common sense) so that it is more objective and universal for conducting the benefit and cost analysis. Having discussed recent literature on CBDC, Islamic economy and ethics, I will strive to discuss some results, and develop an analysis in the following section.

RESULTS AND DISCUSSION

The main result of this research is distinctions and similarities among variables concerning Digital Rupiah and other CBDC, given that the chosen methodology in the previous section is comparative analysis. The following table is a brief of those similarities and differences:

Tabel 1
Digital Rupiah and other CBDC

	Differences	Similarities
Digital Rupiah	Retail and Wholesale CBDC	1) They are not launched yet as per May 2023
	Financial inclusion is an argument in favor for the retail CBDC	2) Central banks do acknowledge that CBDC is a response to the dynamic of cryptocurrencies but claiming
	It is still on the research level as per May 2023	3) There is no single clue yet concerning CBDC as a token of the real general interest of Muslims and non-Muslims around the globe; or it is merely the vested interest of central banks in many countries instead
SGD CBDC	Only wholesale CBDC	4) There is no cogent fatwa concerning CBDC in Indonesia, Singapore and the US yet.
	Good financial inclusion is an argument against the retail CBDC	
	It is already on the level of pilot project as per May 2023	
USA CBDC	Only wholesale CBDC	
	Igniting legal responses in some states	
	It is still on the research level as per May 2023	

Source: The author's analysis

Discussion

Given that CBDC are on-going projects in many countries, these differences and similarities are subject to change in the future. Just as the token of assets have been developing from tangible to intangible assets, so does with the token of currencies by which case it has been developing from gold and silver to the fiat money. On this occasion, Muslims might need to reconsider the notion of tangible assets. El Alaoui, Dchieche and Asutay argue as following: “Taking a quick glance on Islamic Finance principles, it is trivial to say that digital currencies could not be Shari’ah compliant since they are backed by no tangible asset. However, the virtual currency uses a highly technological encryption algorithm that needs a lot of effort and energy to be generated. The more its quantity increases the more the digital currency becomes costly to be generated until attaining the maximum quantity allowed by the issuer” (El Alaoui, Dchieche, & Asutay, 2021, p. 32).

In other words, the scope of tangible assets in our time should include the amount of energy and efforts being consumed to produce and serve the intangible technology. Previous limit of tangible assets could no longer be the ground to argue against digital currencies, including CBDC, in the realm of Islamic finance. Consequently, opponents of CBDC in Islamic economy should seek another foundation to refuse it. Questions concerning the potential harm of both retail and wholesale CBDC against some principles of Islamic economy should address some issues like usury (*riba*),

interest, *giro*, and buying and selling currencies (*al-sharf*). The Indonesian Ulama Council (MUI) interestingly distinguishes interest and usury as it is apparent in the way they define both of them as below: “*Bunga* (interest/*fa’idah*) is an additional charge in a money loan transaction (*al-qardh*) which is calculated from the principal of the loan without considering the utilization/result of the principal, based on the time period, definitely calculated in advance, and generally based on a percentage “*Riba* is an additional (*ziyadah*) without reward (بل *عوض* that occurs due to a delay in payment (الأجل زيادة) previously agreed upon, مقدماً اشترط). And this is what is called *riba nasi’ah*” (MUI, 2004, p. 434).”

In other words, there is a significant different of meaning between interest and usury according to the MUI though interest could conceptually include usury. This MUI position falls into the category of “providing new interpretation to what is called as *riba*” as opposed to the category of “developing a new banking system without *riba*” (Musawiyah, 2011, p. 163). The latter category seems to be ignoring the line between usury and interest as it is manifested in a definition of usury as “excess over the principal whether in cash or in kind” (Shirazi, 1988, p. 27). This definition of usury eliminates the potential existence of an additional charge being calculated from the principal loan (without considering the utilization of such loan) in MUI’s definition of interest above.

To get the sense of how the word ‘usury’ intertwines with ‘interest,’ it is necessary to have a look into their

historical development. According to Elliott: "Interest is comparatively a new word in the language meaning also a premium for a loan of money. It first appeared in the fourteenth century, as a substitute for usury, in the first law ever enacted by a Christian nation that permitted the taking of a premium for any loan...Interest was at the first a legal term, used in law only...In modern usage usury is limited in its meaning to that measure of increase prohibited by the civil law. Thus the two words interest and usury now express what was formerly expressed by the one word usury alone. Interest covers that measure of increase that is authorized in different countries, while usury, with all the odium that has been attached to it for ages, is limited to that measure of increase that for public welfare is forbidden by the laws of a state" (Elliott, 1902, p. 9).

In brief, usury is illegal but interest is legal. Elliott furthermore makes an interesting hypothetical syllogism saying that "If a state should forbid the taking of any increase on loans, then all increase would be usury, and there could be no interest; or if a state should repeal all laws limiting the exactions[*sic!*] of increase, then there would be no usury in that state" (Elliott, 1902, p. 10). He strives to be objective in presenting the historical development of the words usury and interest though Elliott considers the two are one and the same, and consequently he refuses both of them. It is obvious in his statement that "We must not permit our views of divine and economic truth to be perverted by this modern division of increase into legal and illegal" (Elliott,

1902, p. 10). Elliott's view on interest and usury is similar to Baqir Sadr's view.

In their fatwa number 01/DSN-MUI/IV/2000, the Indonesian MUI gave a consideration saying "that all giro activities are not justified by Islamic law (*shariah*)" (DSN-MUI, 2000, p. 1). They indeed categorize two types of giro. First, interest-based giro that is not justified by sharia. Second, *mudharabah* and *wadi'ah* based giro that is justified by sharia. However, this fatwa does not provide a definition of giro which shed some light on how the Indonesian MUI comprehends it. In general, we can say that giro is an electronic system which allows money to move from one account to another (either in a bank or a post office) through a central computer. Given that the genus of this definition of giro is 'an electronic system' and its *differentia* involves 'a central computer'; then one might argue that giro shares some similarities with CBDC. If this is the case, then what MUI says about giro should also apply to CBDC. As I write this section of article on the third week of May 2023, there is no MUI fatwa concerning CBDC nor digital currency in general yet.

Suppose that the BI allows either retail or wholesale Digital Rupiah to be traded in the currency market. Thus, with respect to the Islamic economy, a Muslim should pay attention to the MUI's fatwa saying "that in 'urf tijari (trade tradition) currency buying and selling transactions, there are several forms of transactions whose legal status in the view of Islamic teachings differ from one form to another" (DSN-MUI, 2002, p. 1). The Indonesian MUI only allows foreign exchange (forex)

being happened in the spot market, and they judge *haram* or illegal on other types of forex being transacted in the forward, swap and option markets (DSN-MUI, 2002, pp. 3-4). Therefore, an Indonesian Muslim might trade Digital Rupiah only in the spot market according to such line of argument.

Islam is enormous with schools of thoughts especially in jurisprudence and law known as *fiqh*. For instance, Grand Ayatollah al-Sistani argues in his ruling number 2306 as it is available from within his book entitled *Islamic Laws* as following: “If a person gives something to someone so that he may take a greater amount in another city, and if the item is gold, silver, wheat, or barley which can be weighed or measured, it is usury and unlawful. However, if the party that is taking the extra amount gives or does something in return, there is no problem. If bank notes are given on loan, it is not permitted to take back more. If a person sells them as an immediate exchange (*naqd*) transaction, or on credit (*nasi'ah*) but the money is in two currencies, such as pounds sterling and dollars, then there is no problem with any extra received. However, if it is a credit sale and the money is in one currency only, then receiving an extra amount is problematic (*mahall al-ishkāl*) [i.e. based on obligatory precaution, it is to be avoided]” (al-Sistani, 2017).

This fatwa entails an opportunity for Islamic banks to innovate by utilizing more than one currency in order to justify any extra money being taken as a profit. In another book, Grand Ayatollah al-Sistani also establishes a view that is

significant for the development of Islamic banking. In his book entitled *Jurisprudence Made Easy*, his argument takes the form of a dialogue between he and his late father as below: “Some people borrow money from the bank and the latter demands interest to lend them the money; on certain occasions, the bank requires the borrower to give a guarantee. How should such people go about this kind of transaction?

It is not permissible to take a loan from the bank if it stipulates the charging of interest, for it is usury, irrespective of whether the loan was with or without surety. It is permissible, however, to receive such money not with the intention of it being a loan. Once the approval of the *Marji'* or his representative was obtained, the recipient can have the right of disposal over the money. Thereafter, their knowledge that the bank is going to compel them to pay the interest shall be of no consequence. Yet, when the bank does so, they should comply with its request. Here, I would reiterate that disposing of moneys withdrawn from state banks in Muslim countries, in any transaction, can be done only with the approval of the *Marji'* or his representative” (al-Sistani, 1997, p. 244).

This account is significant because it puts emphasize on the notion of intention as a way to avoid usury or *riba* to the extent there is an approval from a *Marja'* (the highest authority of Shiite Islamic jurisprudence) afterwards. The Indonesian MUI might serve in a similar way though it has a very different context with the *Marja'iyyah* system in Shiite Islam. The variety of thoughts concerning Islamic

fiqh (jurisprudence and law) should have been triggered a significant development and differentiation of Islamic banking business models. However, this is not the case yet. Imam Khomeini meticulously establishes a distinction between economic system, economic school, economic principles and economic rules. The concept of Islamic economy incorporates a set of Islamic instructions which reflect those four areas. Economic systems differ across region and era, and it consists of the economic school, frameworks and methods. Economic school consists of a set of economic principles which drive the general orientation of economic system.

Economic principles are the ramification of economic rules such as the principle “among the personal and common interests, the latter one has the legal priority”; is, according to Imam Khomeini, an entailment of some rules such as damage prohibition, interest wasting prohibition, wasting prohibition and constriction and distress prohibition. Last but not least, economic rules are economic jurisprudence or jurisprudence of economics such as “it is necessary to consume things based on the needs;” “usury is forbidden;” or “wasting is illegal” (Khomeini, 2015). Therefore, rules set the foundation for principles; principles characterize economic schools; Islamic economic schools regulate the economic system; the Islamic economic system should vary with respect to different society in different age.

CONCLUSIONS

Both retail and wholesale versions of Digital Rupiah could potentially cause

harms to some principles in Islamic economics and Islamic economy especially in the context of Baqir Sadr’s thoughts. It deals with the way we comprehend some issues and practices such as usury (*riba*), giro, interest, buying and selling currencies (*al-sharf*). The variety of Islamic jurisprudence (*fiqh*) should have inspired and triggered the variety of products and services in Islamic economy including CBDCs in Islam countries. However, this is not the case yet.

Henry Sidgwick's thought in ethics could be helpful in the sense of providing a theoretical foundation for justifying Digital Rupiah (and other CBDCs). Sidgwick's account of Rational Benevolence is indispensable for justifying both types of Digital Rupiah insofar as the Bank Indonesia could convince public that Digital Rupiah is rationally kind and helpful for strengthening not only the Indonesian economy but also practices of Islamic economy in Indonesia as well as the discursive development of Islamic economics. However, Sidgwick was not popular among Indonesian economists and philosophers.

Digital Rupiah could potentially be *riba* to an extent that there is no distinction between interest and usury. However, the Indonesian MUI distinguishes between the usury and interest. If this is the case, there would be no virtual usury in either retail or wholesale Digital Rupiah. The idea of underlying asset to support the economic value of Digital Rupiah; can no longer be an argument in favor of judging Digital

Rupiah as a product of *riba* because digital currencies require serious efforts, power and energy to manufacture it in such a way, and one should not ignore it as a type of an underlying asset.

Henry Sidgwick's Utilitarianism as opposed to Rational Egoism and Intuitionism (or common sense); is indispensable for justifying the innovation and development of Digital Rupiah because his Utilitarianism needs the axiom of Rational Benevolence instead of Prudence and Equity. In other words, every innovation and development of Digital Rupiah and other CBDC should reflect the rational desire to do good, being generous, helpful and kind; rather than a simple rational avoidance against unnecessary risk as it is well reflected in the case of SGD CBDC and USD CBDC. Financial inclusion, for instance, might not be helpful, generous and kind enough to reach the stage of Rational Benevolence because Sidgwick's Utilitarianism does comprehend the Universal Good as the Universal Happiness. Insofar as CBDC imply benefits only to banks and some affluent individuals, then it does not reflect the Universal Happiness.

The BI should pay more attention to two-tier CBDC in overseas because it would be more compatible with the preference to release both wholesale and retail Digital Rupiah. One interesting example is Project Aurum that is two-tier CBDC's prototype developed by the Hong Kong Monetary Authority and the Bank for International Settlements (BIS) Innovation

Hub. Moreover, Islamic jurists should strive for more *ijtihad* on non-underlying CBDC, the line between tangible and intangible assets, and gold-backed CBDC. To an extent, the current situation might be similar to the time when the fiat money was first introduced to the Muslim world.

This study is limited to the Digital Rupiah and Islamic economy with a brief comparison to Singaporean and American CBDCs. Islamic economists, jurists and ethicists should investigate this issue in the future by enlarging its unit of analysis, scope and varying its theoretical perspectives.

REFERENCE

Book

al-Sistani, al-S. A. al-Husayni. (1997). *Jurisprudence Made Easy* (English edition; N. al-Khafaji, Trans.). London: Imam Ali Foundation.

as-Şadr, M. B. (1982a). *Iqtisādunā: Our Economics: Discovery Attempt on Economic Doctrine in Islam* (first edition, Vol. 2 part 1). Tehran: World Organization for Islamic Services.

as-Şadr, M. B. (1982b). *Iqtisādunā: Our Economics: An Objective Study Consisting of the Examination and Criticism of the Economic Doctrines of Marxism, Capitalism and Islam as Concerns the Fundamentals and Details of Their Ideas* (first edition, Vol. 1 part 2). Tehran: World Organization for Islamic Services.

Blair-Walcott, K. (2023). Comparative Analysis. In J. M. Okoko, S. Tunison, & K. D. Walker (Eds.), *Varieties of Qualitative Research Methods: Selected Contextual Perspectives* (pp. 79–84). Cham, Switzerland: Springer.

de Lazari-Radek, K., & Singer, P. (2014a). Preface. In *The Point of View of the Universe: Sidgwick and Contemporary Ethics* (first edition, pp. vii–xiii). Oxford: Oxford University Press.

de Lazari-Radek, K., & Singer, P. (2014b). *The Point of View of the Universe: Sidgwick and Contemporary Ethics* (first edition). Oxford: Oxford University Press.

Elliott, C. (1902). *Usury: A Scriptural, Ethical and Economic View*. Millersburg, Ohio: The Anti-Usury League.

Musawiyah, S. A. (2011). *Sistem Perbankan Islam: Berkaca pada Iran* (first edition). Jakarta: Sadra Press.

Shirazi, H. (Ed. & Trans.). (1988). *Islamic Banking: Contracts* (first edition). Tehran: Central Bank of the Islamic Republic of Iran.

Sidgwick, H. (1901). *The Principles of Political Economy* (third edition). London: Macmillan and Co., Limited.

Sidgwick, H. (1962). *The Methods of Ethics* (seventh edition). London: Palgrave Macmillan.

Journal Article

Barata, A. (2019). Strengthening National Economic Growth and Equitable Income through Sharia Digital Economy in Indonesia. *Journal of Islamic Monetary Economics and Finance*, 5(1), 145–168.

Furqani, H. (2019). What is Islamic Economics? The view of Muhammad Baqir al-Sadr. *Jurnal Ekonomi & Keuangan Islam*, 5(2), 63–71.

Grassa, R., Sarea, A., El-Halaby, S., & Damak, A. N. (2022). Between Two Crises: Do Islamic Banks Suffer? *Journal of Islamic Monetary Economics and Finance*, 8(2), 251–274.

Rizvi, S. A. R., & Ali, M. (2022). Do Islamic Cryptocurrencies Provide Diversification Opportunities to Indonesian Islamic Investors? *Journal of Islamic Monetary Economics and Finance*, 8(3), 441–454.

Chapters in edited books

El Alaoui, A. O., Dchieche, A., & Asutay, M. (2021). Combining Islamic Equity Portfolios and Digital Currencies: Evidence from Portfolio Diversification. In N. Alam & S. N. Ali (Eds.), *Fintech, Digital Currency and the Future of Islamic Finance* (pp. 31–48). Cham, Switzerland: Palgrave Macmillan.

Website material

al-Sistani, al-S. A. al-Husayni. (2017). *Islamic Laws* (the combined edition; S. M. A. Ismail, Trans.). Exeter: The World Federation. Retrieved from <https://www.sistani.org/english/book/48/2320/>

Bank Indonesia. (2022). *Project Garuda: Navigating the Architecture of Digital Rupiah*. Bank Indonesia. Retrieved from <https://www.bi.go.id/id/rupiah/digital-rupiah/default.aspx>; on 10 May 2023.

Bank Indonesia. (2023a). *Monetary Policy Report: Quarter I 2023* (p. 20). Bank Indonesia. <https://www.bi.go.id/en/publikasi/laporan/Pages/Laporan-Kebijakan-Moneter-Triwulan-I-2023.aspx>; last accessed on 6 May 2023.

Bank Indonesia. (2023b). Broad Money (M2) and Affecting Factors: March 2023. Jakarta: Bank Indonesia. Retrieved from Bank Indonesia website: <https://www.bi.go.id/en>

</publikasi/laporan/Documents/M2-March-2023.pdf>; on 10 May 2023.

Bank Indonesia. (2023c). *Bersiap Kembangkan CBDC, BI Segera Rilis White Paper*. Bank Indonesia. Retrieved from <https://www.bi.go.id/id/publikasi/ruang-media/cerita-bi/Pages/Bersiap-Kembangkan-CBDC-BI-Segera-Rilis-White-Paper.aspx>; on 3 May 2023.

Bank Indonesia. (2018). *Bank Indonesia Memperingatkan kepada Seluruh Pihak agar Tidak Menjual, Membeli atau Memperdagangkan Virtual Currency*. Bank Indonesia. Retrieved from https://www.bi.go.id/id/publikasi/ruang-media/news-release/Pages/sp_200418.aspx; on 3 May 2023.

Banque de France. (2021, July 8). Banque de France and Monetary Authority of Singapore Break New Ground in CBDC Experimentation [Central Bank of France]. Retrieved May 10, 2023, from Banque de France website: <https://www.banque-france.fr/en/communique-de-presse/banque-de-france-and-monetary-authority-singapore-break-new-ground-cbdc-experimentation-0>

Bank of Jamaica. (2021, December 31). BOJ's CBDC Pilot Project a Success [Central Bank of Jamaica]. Retrieved May 10, 2023, from Bank of Jamaica website: <https://boj.org.jm/bojs-cbdc-pilot-project-a-success/>

CBDC Tracker. (2023). *Today's Central Bank Digital Currencies Status* [Online map]. CBDC Tracker. Retrieved from <https://cbdctracker.org/> on 10 May 2023.

Central Bank of the Bahamas. (n.d.). The Bahamian Payments Systems Modernisation Initiative (PSMI) [Central Bank of the Bahamas]. Retrieved May 10, 2023, from Digital Bahamian Dollar website: <https://www.sanddollar.bs/history>

Dorazio. 88R25770 *KJE-D* . , Pub. L. No. H.B. No. 4903. (Substitute C.S.H.B. No. 4903 by Spiller). Retrieved from <https://capitol.texas.gov/Search/DocView.aspx?ID=88RHB049032B&QueryText=%22digital+currency%22&DocType=B>; on 13 May 2023.

Dorazio. (n.d.). *Bill Analysis: C.S.H.B. 4903*. Retrieved from <https://capitol.texas.gov/Search/DocView.aspx?ID=88RHB049032A&QueryText=%22digital+currency%22&DocType=A>; on 13 May 2023.

DSN-MUI. *Fatwa Dewan Syari'ah Nasional tentang Giro* . , Pub. L. No. 01/DSN-MUI/IV/2000, 4 (2000). Retrieved from <https://drive.google.com/file/d/0BxTl-INihFyzUDREVGhwZ2FfRUE/view?resourcekey=0-QU1lUqK77tkDtp3G8zdb9Q>; 20 May 2023.

DSN-MUI. *Fatwa Dewan Syari'ah Nasional tentang Jual Beli Mata Uang (Al-Sharf)* . , Pub. L. No. 28/DSN-MUI/III/2002, 4 (2002). Retrieved from https://drive.google.com/file/d/0BxTl-INihFyzbVd5VE5WV1ZqcW8/view?resourcekey=0-Hy7g6_DjIQN0EdnGdfJTpg; on 20 May 2023.

Khomeini, I. R. M. (2015, July 14). What is the meaning of Islamic economics? [Official government website]. Retrieved April 25, 2023, from Imam Khomeini: Ruhollah Mousavi Khomeini website: <http://en.imam-khomeini.ir/en/c10412454/Ask Question/Law Islamic Jurisprudence/What is the meaning of Islamic economics>

Monetary Authority of Singapore. (2021). *A Retail Central Bank Digital Currency: Economic Considerations*

in the Singapore Context. Monetary Authority of Singapore. Retrieved from <https://www.mas.gov.sg/-/media/MAS/EPG/Monographs-or-Information-Paper/A-retail-CBDC---Economic-Considerations-in-the-Singapore-Context.pdf>; on 10 May 2023.

MUI. *Fatwa Majelis Ulama Indonesia tentang Bunga (Interest/Fa'idah).* , Pub. L. No. 1/2004, 12 (2004). Retrieved from <https://drive.google.com/file/d/1KFUu9ct0W2pJIDvW59W1ePb5CrLRIWMI/view>; on 4 May 2023.

NN. (2023, May 12). Governor Ron DeSantis Signs First-in-the-Nation Legislation to Protect Against Government Surveillance of Personal Finances [Governor website]. Retrieved May 14, 2023, from Ron DeSantis: 46th Governor of Florida website: <https://www.flgov.com/2023/05/12/governor-ron-desantis-signs-first-in-the-nation-legislation-to-protect-against-government-surveillance-of-personal-finances/>

PT Rupiah Token Indonesia. (n.d.). Can the price of Rupiah Tokens go up? [A crypto-asset website]. Retrieved May 21, 2023, from RupiahToken website: <https://rupiahtoken.com/faq/can-the-price-of-rupiah-tokens-go-up>

PT Rupiah Token Indonesia. (2019). *Rupiah Token.* PT Rupiah Token Indonesia. Retrieved from <https://rupiahtoken.com/whitepaper.pdf>; on 21 May 2023.

Rep. Emmer, T. *H.R.1122—CBDC Anti-Surveillance State Act.* , Pub. L. No. H. R. 1122 (2023). Retrieved from <https://www.congress.gov/bill/118th-congress/house-bill/1122/text?s=1&r=12>; on 13 May 2023.

Sen. Lee, M. *S.967—No CBDC Act.* , Pub. L. No. S. 967 (2023). Retrieved from <https://www.congress.gov/bill/118th-congress/senate-bill/967/text?s=1&r=3&q=%7B%22search%22%3A%5B%22digital+currency%22%5D%7D>; on 13 May 2023.

The Federal Reserve. (2022). *Money and Payments: The U.S. Dollar in the Age of Digital Transformation.* The Federal Reserve. Retrieved from <https://www.federalreserve.gov/publications/files/money-and-payments-20220120.pdf>; on 16 May 2023.

The Florida Senate. *SB 7054: Central Bank Digital Currency.* , Pub. L. No. SB 7054, 4 (2023). Retrieved from <https://www.flsenate.gov/Session/Bill/2023/7054/BillText/er/PDF>; on 13 May 2023.

Wong, L., & Shanmugaratnam, T. (2022, March 2). Reply to COS Cut on Digital Sing Dollar [Central Bank of Singapore]. Retrieved May 10, 2023, from Monetary Authority of Singapore website: <https://www.mas.gov.sg/news/parliamentary-replies/2022/reply-to-cos-cut-on-digital-sing-dollar>; on 10 May 2023.